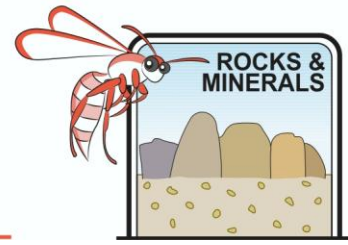


Erosion by Wind – Teacher Notes



With the exception of glacial ice anything which moves materials sorts them by size and by density. The “Yandy” activities demonstrate how humans can sort mixed materials by movement.

Both wind and water act in the same way.

- 1. The greatest energy is near the base of the current.**
- 2. The greater the distance travelled the less the carrying power of the current due to friction.**

Wind

Winds are not caused by direct radiation from the sun heating the atmosphere but from heat increasing the temperature of the Earth’s surface. Heat is conducted into the atmosphere where expansion creates convection currents. As the air heats it becomes less dense and rises. This allows colder heavier air to flow in and replace it. View

<http://www.weatherwizkids.com/weather-wind.htm>

Most students have walked across a windy beach or sand plain. They may remember that blown sand stings around their ankles but is not noticeable higher on their bodies. The greatest energy is near the base of the current. This is why it can be difficult taking small dogs for walks on the beach on a windy day.

In the inland, uneven heating over clay pans and surrounding scrub can create “willy willies” or “cockeyed bobs” which tear up vegetation and occasionally damage homes. Since the earth moves under the atmosphere the current is twisted. Some Aboriginal parents tell their children that if they don’t behave an evil spirit will come down through a willy willy and chastise them. The legend of the creation of the brolga, a large native bird found in the tropics involves a young girl taken away in a willy willy. She preferred dancing to working.



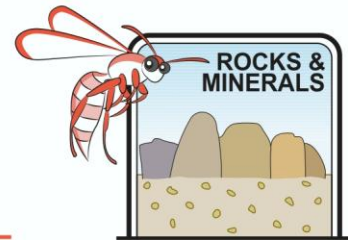
Teacher demonstration the sorting effect of a wind current

- A weekend newspaper
- A hairdryer or fan
- A pile of dry mixed sediment (if you don’t have sediment a packet of dry soup mix and sand will work to a degree)

Covering part of a corridor or side of the classroom with overlapping sheets of newspaper. Spray air from a hairdryer or fan onto a pile of dry mixed size sediments.

Fine clay particles will travel the farthest grading to pebbles near the wind source.

HINT: Do not let the students stand at the other end of the line of overlapping newspaper. They will get dust in their eyes. The paper overlap should point away from the hairdryer.



Erosion by Wind – Teacher Notes



Wave Rock near in Western Australia

The profile of Wave Rock demonstrates a decrease in erosive power of wind with height. Sand grains carried by wind have worn away this rock and carried away the debris. Here at Wave Rock in the wheat belt of W.A., humic acid (rotted vegetation) has chemically started the breakdown of granite at ground level. Wind blown sand erosion has started at this weakened level and worked upwards creating the cave like curve.

EXTRA for EXPERTS: Perched pebbles

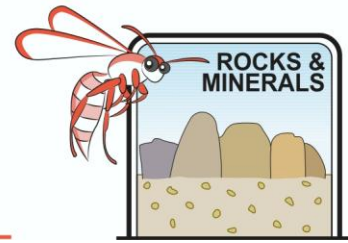
Since the maximum erosive effect is at the base of a wind current consistent streams of air can undercut pebbles lying on the top of sand or dirt.



To demonstrate the effect of wind

Materials per student

- 1 Petri dish
- A little water
- Dry sand or dirt
- A few pebbles
- A drinking straw
- A sheet of newspaper



Erosion by Wind – Teacher Notes

1. Spread the newspaper out and place the Petri dish near the edge
2. Moisten the bottom of the Petri dish with a little water
3. Fill with sand
4. Place the pebbles on top of the sand
5. Gently blow through the straw to move the sand from between the pebbles

Constant abrasion by wind blown sand and deposition of iron and manganese from evaporating groundwater causes “desert varnish” on exposed rock in our interior.



Pebbles from the plains south of the Pilbara

Students might reflect on:

- Car “Duco” or paintwork being rendered dull by inland dust and wind
- Ankle sting from wind blown sand
- Sand blasting waterside restaurant windows rendering them opaque
- A hand lens or magnifying glass can be used to see that the surface of individual grains of desert sands (silica), have been rendered opaque. The yellow sands behind the coast also demonstrate this sand blasted opaque surface